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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,978	03/13/2002	Fumihiko Yamaguchi	Q68929	4856

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WASHINGTON, DC 20037

EXAMINER

ASINOVSKY, OLGA

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n No.

10/070,978

Applicant(s)

YAMAGUCHI ET AL.

Examiner

Olga Asinovsky

Art Unit

1711

-- The MAILING DATE of this c mmunication appears on the c ver sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 13 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitfield et al U.S. Patent 3,632,391 or Hayama et al U.S. Patent 5,180,766.

The present invention is a graft copolymer wherein a branch polymer having a fluoroalkyl group is bonded to a trunk polymer=backbone polymer through a linkage having  $-C(=O)NH-$  group, wherein the linkage having a  $-C(=O)NH-$  group is formed by reacting an active hydrogen group of a chain transfer agent constituting the branch polymer with an isocyanate group containing in a monomer constituting the trunk polymer. In other words, the invention is a graft copolymer wherein a backbone polymer=substrate=trunk polymer has a reactive isocyanate group-containing vinyl monomer, and wherein a said trunk polymer is grafted with an oligomer having a fluoroalkyl group.

Whitfield discloses a process for modifying a fibrous material for increasing water-, oil, or soil-repellency, column 21, lines 42-57 by impregnating a fibrous material with a preformed polymer (A) and a fixative or cross-linking component (B), column 1, lines 70-75, column 2, lines 1-4, column 4, lines 42-45 and

column 40, claim 26. A preformed polymer (A) can be formed from a polymerizable monomer of a formula  $\text{CH}_2=\text{C}<$  and a highly reactive group such as isocyanate, column 22, lines 6-8 and column 8, lines 28-44. Also, a component (A) can be a fluorinated ester having fluoroalkyl radical represented by the formula at column 6, line 60. The fluorine-containing monomers can be any compounds of the structures at column 7, lines 15, 65, 70. A component (B) can be any of the aliphatic, aromatic, or heterocyclic compound containing at least two isocyanate ( $-\text{NCO}$ ) groups, column 16, lines 71-74. Compound such as ethylene diisocyanate, column 17, line 3 is within the scope of applicants' claimed trunk polymer having isocyanate group-containing vinyl monomer.

Whitfield discloses different combinations of the components (A) and (B).

The difference between the present claims and Whitfield is that a branch polymer having a fluoroalkyl group is bonded to a trunk polymer through a linkage having a  $-\text{C}(=\text{O})\text{NH}$ -group. However, in light of the Whitfield disclosure at column 12, lines 73-75 and column 13, line 1, it would have been obvious to one having ordinary skill in the art to select the combination of the component (A) and (B) so that they contain reactive groups which are reactive with one another for obtaining a graft copolymer. Therefore, it is obvious to one of ordinary skill in the art to select a polymer having a fluorine-containing monomer and a trunk polymer having isocyanate group-containing vinyl monomer, and, thereby, obtain the claimed requirement.

Hayama discloses a primer composition comprising a copolymer of (I) a radical-polymerizable olefin resin and © a monomer copolymerizable with the olefin resin and containing a fluorine-containing unsaturated monomer, column 1, lines 57-60. The olefin resin (a) having at least one functional group per molecule can be obtained by reacting an ordinary polyolefin with an unsaturated compound (b), column 2, lines 19-22, wherein a said unsaturated compound can include N-methylol(meth)acrylamide or 2-isocyanatoethyl (meth)acrylate, or methacryloyl isocyanate, column 2, lines 20-22, 39 and 61-65-68. The olefin resin (I) having at least one functional group (b) per molecule is readable in applicants; claims as a trunk polymer having isocyanate group. The monomer (c) can be selected as being the fluorine-containing unsaturated monomer such as fluoroalkyl (meth)acrylate, column 5, lines 19-33 and 35- 44. The fluorine-containing unsaturated monomer is within the scope of applicants' claimed branch polymer. Therefore, Hayama discloses copolymer obtained by the copolymerization of a backbone polymer which is the olefin resin (a) having a functional isocyanate group and graft segments which are polymers made up of units derived from the monomer (c) containing a fluorine-containing unsaturated monomer, column 6, lines 51-63.

The difference between the present claims and Hayama is that Hayama discloses varieties of the unsaturated compounds having different functional groups, column 2, lines 20-68. However, it would have been obvious to one of ordinary skill in the art to select the unsaturated compound having isocyanate

group because the functional groups cited at column 2, lines 20-68 work within the same expectation of adequate results, and, thereby, obtain the claimed requirement.

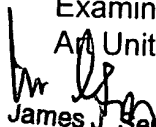
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art is relevant to show the state of the art knowledge.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 703-308-0041. The examiner can normally be reached on 9:00 to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 703-308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7718 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

O.A.  
O.A.  
May 16, 2003

Olga Asinovsky  
Examiner  
Art Unit 1711  
  
James J. Seidleck  
Supervisory Patent Examiner  
Technology Center 1700